Petrological Abstracts and Reviews

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Berek, M. "Zur Messung der Doppelbrechung hauptsächlich mit Hilfe des Polarisationsmikroskops," *Centralbl. f. Min. Geol. u. Pal.*, 1913, 388–96, 427–35, 464–70, 580–82. Figs. 7.

The new Berek compensator here described is somewhat similar in pattern to the Nikitin quartz compensator. In the present case, however, the mineral plate is calcite. The author shows that the dispersion of mineral sections nearly at right angles to the optic axis becomes practically zero, consequently any inactive, uniaxial mineral is suitable. Since rather a thick section is required to give the higher orders of colors, quartz cannot be used on account of its rotary polarization. The construction of this instrument permits much more accurate measurements than that of Nikitin. A calcite plate, 0.1 mm. in thickness, cut at right angles to the optic axis, is attached to a rotatable axis in a slider which is to be inserted in the slot in the microscope above the objective. Since it is thus between the polarizing prisms, no cap nicol is required. The amount of rotation of the plate is read from a graduated drum and vernier to 2′. With the thickness of calcite used, it is possible to read colors to the fourth order. If higher readings are desired, the calcite plate may readily be removed and replaced by one that is thicker. The sensitiveness of this compensator is shown to be equal to that of Babinet for moderate double refraction, and greater for low colors.

Berek, M. "Über Zirkularpolarisation," *Fortschr. d. Min., Krist., u. Petr.*, IV (1914), 73–114, 221–62. Fig. 1.

A full discussion of the phenomenon of rotary polarization.

Berek, M. "Die astigmatischen Bildfehler der Polarisationsprismen," *Centralbl. f. Min. Geol. u. Pol.*, 1919, 218–24, 247–55, 275–84. Figs. 5.

The insertion of the nicol prism between the objective and ocular causes astigmatic and focal disturbances. The latter is usually com-

pensated by means of a lens above the analyzer, but the former has hitherto been left uncorrected. In this paper the cause of the astigmatism is discussed and lenses for its correction are suggested. Two photographs of the same slide show the remarkable improvement in definition with the corrected nicol.

BEREK, M. "Über die Berechnung der Polarisationsverhältnisse im Gesichtsfelde der Polarisationsprismen," *Verhandl. d. Deutschen Physikal. Gesell.*, XXI (1919), 338–46.

BEREK, M. "Die Schärfentiefe des Mikroskops," *Zeitschr. f. wissensch. Mikroskopie*, XXXVII (1920), 120–22. Fig. 1.

BEREK, M. "Uber die einfachen und zusammengesetzten charakteristischen Konstanten der Mikroskopobjektive," *Zeitschr. f. wissensch. Mikroskopie*, XXXVII (1920), 36–41. Figs. 2.

A discussion of the use of 250 mm. and Δ in the determination of the enlargement of objectives.

BERKEY, CHARLES P. "Geological Reconnoissance of Porto Rico," *Ann. N.Y. Acad. Sci.*, XXVI (1915), 1–70. Figs. 20, maps and profiles 2.

This is a report of the New York Academy of Sciences Expedition to Porto Rico undertaken, in part, to determine the nature and origin of the rock formation and to group them into series suitable for use in subsequent geological work. Two series are described—a younger, consisting of Tertiary shales, reef limestones, and recent deposits, and an older including tuffs, ashes, shales, conglomerates, limestones, and a great variety of probably pre-Tertiary intrusives. Igneous rocks described briefly are extrusive basalts and andesites, and intrusive andesite-prophyry, granite-porphyry, granite, and diorite.

BOEKE, H. E. "Die Eisenerze," *Die Umschau*, XXIII (1919), 289–92.

A popular article on the occurrence of iron ore.

BOWEN, N. L. "Differentiation by Deformation," *Proc. Nat. Acad. Sci.*, VI (1920), 159–62.

Discusses differentiation according to Darwin's theory of fractional crystallization and the squeezing out of the mother liquor.

BOWEN, N. L. "The Sodium-Potassium Nephelites," *Amer. Jour. Sci.*, XLIII (1917), 115–32. Figs. 2.

While this is strictly a mineralogical paper, it is of importance to petrographers in showing the inaccuracy of calculating nephelite as $Na_2O \cdot Al_2O_3 \cdot 6SiO_2$. It is here shown that the molecules $NaAlSiO_4$ and $KALSiO_4$ are fundamental constituents of it, although they may be present in variable amounts.

BRAUNS, R. "Skapolithführende Auswürflinge aus dem Laacher Seegebiet," *Neues Jahrb.*, B.B., XXXIX (1914), 79–125. Pls. 2.

Describes seventeen different kinds of scapolite rocks from the Laacher Sea region. Numerous analyses are given.

BRAUNS, R. "Der Laacher Trachyt und seine Beziehung zu anderen Gesteinen des Laacher Seegebietes," *Neues Jahrb.*, B.B., XLI (1916), 420–502. Pls. 2.

This is a very complete study of the Laacher Sea trachyte and related rocks. Twenty-three new analyses are given, all of which are also recast into molecular proportions reduced to 100, and computed according to Osann's system. Nine older analyses are quoted for comparison. A history of volcanic activity in this region is given, and the following conclusions as to the relationships of the rocks are reached: The white pumice, the Dachsbusch trachyte, and the light Laacher trachyte are so closely related chemically that they are thought to have been derived from the same magma, their differences in habit being due to the action of the inclosed gases. Petrographically they may be designated phonolitic trachytes and trachytic phonolites. Further, these rocks are closely related chemically to the adjacent noselite-phonolites, and it is probable that they came from the same magma, their differences being due perhaps to greater differentiation or to assimilation of crystalline schists. The dark Laacher trachyte is more

closely related to the tephrites of the region, and it is assumed that the trachyte assimilated some of its constituents. The oldest and at the same time most basic rocks of the region are the tephritic lavas. These are followed by younger and progressively more acid noselite-phonolite, white pumice, and finally light trachyte. Among the ejectamenta are fragments having the character of dike rocks, some of which are more basic than the tephrites, and others more acid than the Dachsbusch trachyte. Fragments of plutonic rocks, so far as these have been analyzed, show intermediate chemical characters. The rocks are all fully described and only lack estimates of the mineral percentages to present good word-pictures of their appearance.

BRAUNS, R. "Neue skapolithführende Auswürflinge aus dem Laacher Seegebiet," *Neues Jahrb.*, I (1917), 9–44. Pls. 2.

Nine more scapolite-bearing rocks from the Laacher Sea region are described. There are many analyses, and a determination of the refractive index of the sulphate scapolite.

BRAUNS, R. "Über aufgewachsene Karlsbader Zwillinge von Sanidin vom Laacher See," *Neues Jahrb.*, I (1917), 45–49. Pl. 1.

BRAUNS, R. "Einige bemerkenswerte Auswürflinge und Einschlüsse aus dem niederrheinischen Vulkangebiet," *Centralbl. Min. Geol. u. Pal.*, 1919, 1–14. Fig. 1.

BRENNER, TH. "Über Theralit und Ijolit von Umptek auf der Halbinsel Kola," *Bull. Com. Géol. Finlande, No. 52*, 1920, 1–30. Figs. 4.

Here are described the Kola Peninsula theralite, and a new ijolite from the Tachtarwun Valley. The descriptions are elaborate and good with the exception of the omission of an estimate of the mineral percentages in the theralite. Omissions of this kind lead to such errors as the statement that "es giebt sowohl grobkörnige, helle als kleinkörnige, dunkle Arten." But theralite is a name given by Rosenbusch to certain nephelite, plagioclase plutonic rocks which he thought were represented by certain tephrites and basanites described by Wolff from the

Crazy Mountains. As a matter of fact, they were first found some years later by Wolff in Costa Rica. While in his first published description Rosenbusch does not make the predominance of the dark constituent a necessary qualification, in his later works he grouped the theralites and shonkinites, and said of them: "Die Theralithe und Shonkinite sind hypidiomorphkörnige Tiefengesteine, welche *bei starker Vorherrschaft der dunklen Gemengtheile* durch die Mineralcombination Nephelin mit Kalknatronfeldspath, bezw. Nephelin mit Kalifeldspath, charakterisirt sind," consequently there can be no light theralites. The analyses of various theralites are recast into both the C.I.P.W. and Osann's system. The ijolite is described fully and analyzed. It differs from the usual ijolites in the presence of arfvedsonite-hornblende. The modal percentages determined by the Rosiwal method are: nephelite 38.25 per cent, arfvedsonite-hornblende 31.96 per cent, aegirite-augite 16.24 per cent, titanite 5.78 per cent, mosandrite 3.81 per cent, magnetite 2.37 per cent, apatite 1.59 per cent. The rock, consequently, may be classified as 3126 (new form, or 3131 old form) of the reviewer's system. The chemical analysis of the rock is computed in the C.I.P.W. system as Ivaaros, and is compared with three other ijolites, one a Malignos, one an Ivaaros, and one an Ijolos. In an appendix are given analyses of fifty-four theralites and related rocks.